REMARKS

This Amendment is in response to the Notice of Non-Compliant Amendment dated November 26, 2008, and the Office Action dated June 27, 2008. Applicant has corrected the underlining for claims 12 and 24 as referred to in the Notice of Non-Compliant Amendment. By this Amendment, Applicant has amended claims 1, 2, 12–14, 17, 22, 24, 25, 31, and 33–35, canceled claim 30, and added new claim 38. Claims 1–29 and 31–38 remain pending upon entry of this Amendment.

Objections to the Specification

In the Office Action, the Examiner objected to the specification as failing to provide proper antecedent basis for the terminology "computer-readable medium" in claim 34. Applicant has amended the specification to provide the appropriate antecedent basis.

Claim Objections for Informalities

In the Office Action, the Examiner objected to claim 17 for certain informalities. Applicant has amended claim 17 to provide appropriate correction.

Claim Rejection Under 35 U.S.C. § 101

In the Office Action, the Examiner rejected claims 12–23 under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Specifically, the Examiner stated that claim 12 is just software per se based on the disclosure. Applicant has amended claim 12 to clarify the structural features of the claimed device. In particular, claim 12 as amended recites one or more interface cards configured to communicate packets via input links and output links. Support for this amendment is found in the original specification at paragraph [0041]. Claims 12–23 are therefore directed to statutory subject matter.

Claim Rejection Under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claims 1, 2, 6 and 10 under 35 U.S.C. 102(b) as being anticipated by Applicant's admitted prior art ("AAPA"). In addition, the Examiner rejected claims 1–3, 5–9, 11–14, 16–20, 22–26, 28–31 and 33–37 under 35 U.S.C. 102(e) as

being anticipated by Sanderson et al. (US 2004/0223500). Applicant respectfully traverses the rejections to the extent such rejection may be considered applicable to the amended claims. AAPA and Sanderson fail to disclose each and every feature of the claimed invention, as required by 35 U.S.C. 102(b) & 102(e), and provides no teaching that would have suggested a rational reason to lead a person of ordinary skill in the art to arrive at the claimed invention.

Claim 1

Claim 1, as amended, requires establishing a label switched path (LSP) through a plurality of intermediate networks communicatively coupled between a first customer network and a second customer network. Claim 1 further requires communicating layer two (L2) service information using a first routing protocol between a first device associated with the first customer network and a second device associated with the second customer network, wherein communicating the L2 service information using the first routing protocol comprises the first device outputting a routing communication in accordance with the first routing protocol, wherein the routing communication includes the L2 service information. Claim 1 further requires providing an L2 service in accordance with the L2 service information to transport L2 communications between the first customer network and the second customer network through the one or more intermediate networks using a label switched path (LSP) established through the plurality of intermediate networks. Neither AAPA nor Sanderson teaches or suggests the inventions defined by Applicant's claim 1.

AAPA

With respect to original claim 1, the Office Action stated that paragraph [0003], lines 1–5 of Applicant's specification discloses communicating L2 service information using a first routing protocol between a first device associated with the first customer network and a second device associated with the second customer network. However, this passage of Applicant's specification states that:

> In some instances, a layer three (L3) network is used as an intermediate transport network between two or more L2 networks in order to allow communication between the L2 networks. In this type of configuration, the L3 network transparently transports L2 communication between the L2 networks, thereby allowing the L2 networks to share an L2 service.

This passage of Applicant's specification makes no mention of communicating L2 service information between a first device associated with the first customer network and a second device associated with the second customer network using a routing protocol. In contrast to the Examiner's assertion, this passage simply generally describes that an L3 network transports L2 communications between L2 networks, allowing the L2 networks to share an L2 service. There is no mention of a routing protocol being used to transport the L2 communications across the L3 network.

Applicant's specification at paragraph [0003] goes on to state:

> Common protocols for transporting the L2 service through the intermediate L3 network are label switching protocols, such as Multi-protocol Label Switching (MPLS) protocols like Resource Reservation Protocol (RSVP) and the Label Distribution Protocol (LDP). In accordance with MPLS, a source device, such as a router connected to one of the L2 networks, can request a path through the intermediate network. This path, referred to as a Label Switched Path (LSP), defines one or more distinct, dedicated, and guaranteed paths through the network to carry MPLS packets from the source to the destination. The MPLS packets encapsulate the L2 communications, thereby effectively shielding the L3 network from the transported L2 information.[1]

Thus, as Applicant's background section makes clear, label switching protocols are commonly used for establishing particular paths along which L2 communications of an L2 service (e.g., VPLS) are transported as data traffic having assigned MPLS labels. Nowhere does Applicant's background section refer to the use of a **routing protocol** to communicate L2 service information for providing the L2 service. The use of label switching protocols for establishing dedicated paths for transporting L2 communications through an intermediate network is entirely different from and does not suggest use of a routing protocol (e.g., BGP) to communicate L2 service information for providing the L2 service.

Also with regard to original claim 1, the Office Action stated that paragraph [0004] of Applicant's specification discloses providing an L2 service in accordance with the L2 service information to transport L2 communications between the first customer network and the second customer network through the one or more intermediate networks using the LSP. Paragraph [0004] states:

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[1] Applicant's specification at paragraph [0003] (emphasis added).

> To properly communicate via these LSPs, each of these VPLS-enabled routers store L2 information, such as Media Access Control (MAC) addresses, as well as VPLS information, such as local and remote VPLS site information. In this manner, these VPLS-enables routers provide transparent L2 connectivity across the intermediate network and simulate a direct LAN.

However, this passage again makes no mention of communicating L2 service information, e.g., VPLS information, between devices associated with different customer networks across a plurality of intermediate networks using a routing protocol. To clarify this difference, Applicant has amended claim 1 to state that communicating the L2 service information using the first routing protocol comprises the first device outputting a routing communication in accordance with the first routing protocol, wherein the routing communication includes the L2 service information. Support for this amendment is found in Applicant's original specification, e.g., at paragraphs [00040], [0043], and [0046], for example. Nothing in Applicant's background discloses or suggests communicating L2 service information (e.g., VPLS information) by outputting a routing communication in accordance with a routing protocol that includes L2 service information.

Sanderson

With regard to original claim 1, the Office Action stated that Sanderson discloses communicating L2 service information using a first routing protocol between a first device associated with the first customer network and a second device associated with the second customer network. For support, the Examiner cited paragraphs [0135]–[0136] of Sanderson. The Examiner further stated that paragraph [0162] of Sanderson discloses providing an L2 service in accordance with the L2 service information to transport L2 communications between the first customer network and the second customer network through the one or more intermediate networks using the LSP, as further required by claim 1.

In contrast to these assertions, Sanderson fails to disclose or suggest using a routing protocol to communicate L2 service information between a first device associated with the first customer network and a second device associated with the second customer network. Instead, paragraphs [0135]–[0136] of Sanderson simply describe an EBGP routing protocol used with a peering relationship between a CE router and a PE router, or an IBGP routing protocol used

between PE routers. For example, Sanderson also describes that a virtual forwarding and routing (VRF) table within the PE router has an IBGP peering relationship with another PE router for aggregating and forwarding customer VPN traffic across the core.[2] These passages simply relate to routing tables that store routing information. However, Sanderson makes no mention of communicating L2 service information using IBGP or any other routing protocol, let alone communicating L2 service information by outputting a routing communication in accordance with a routing protocol that includes L2 service information, as required by amended claim 1. The fact that the Sanderson VRF tables may be used for aggregating and forwarding customer VPN traffic across the core does not teach or suggest that L2 service information is communicated using a routing protocol for providing the L2 service. Sanderson provides no indication that routing protocols are used to for anything other than conveying layer three (L3) routing information in accordance with their conventional use. The Examiner has pointed to no evidence that Sanders teaches using a routing protocol to convey service information for providing a layer 2 VPN (e.g., VPLS).

In addition, Sanderson describes setting up LSPs across a backbone network of a single service provider.[3] Sanderson fails to teach or suggest establishing a label switched path (LSP) through a plurality of intermediate networks communicatively coupled between a first customer network and a second customer network, and providing an L2 service to transport L2 communications through the plurality of intermediate networks using the LSP. As described by Applicant's specification, while a VPLS may provide transparent L2 connectivity across a single intermediate network, establishing L2 connectivity via VPLS across multiple intermediate networks becomes increasingly difficult, especially when the intermediate networks are provided by different service providers. In particular, the intermediate networks may not support VPLS, and the service providers associated with the intermediate networks may be unwilling to do so due to the increased overhead and cost associated with VPLS.[4] Applicant's claimed invention provides techniques for providing L2 services across a plurality of intermediate networks. These techniques may be advantageous in that they allow distributed customer networks to achieve L2

[2] Sanderson at paragraph [0135].
[3] See, e.g., Sanderson at paragraph [0140].
[4] See Applicant's specification at paragraph [0005].

connectivity through the intermediate networks without requiring that the intermediate networks maintain L2 state information associated with the L2 service.

Claim 12

Claim 12 recites a device comprising one or more interface cards configured to communicate packets via input links and output links, and a routing process that receives label information for a label switched path (LSP) through a plurality of intermediate networks communicatively coupled between a first customer network and a second customer network, wherein the routing process receives the label information from packets received by the one or more interface cards. Claim 12 further recites a first routing protocol that receives L2 service information associated with the second customer network by receiving a routing communication that includes the L2 service information, and an L2 service that operates in accordance with the L2 service information and transports L2 communications between the first customer network and the second customer network through the plurality of intermediate networks in accordance with the label information by outputting the L2 communications comprises outputting the L2 communications via the output links of the one or more interface cards.

For reasons similar to those set forth above, neither AAPA nor Sanderson teaches or suggests these elements. For example, AAPA and Sanderson fail to teach or suggest receiving L2 service information using a routing protocol by receiving a routing communication that includes the L2 service information. As another example, AAPA and Sanderson fail to teach or suggest establishing a label switched path (LSP) through a plurality of intermediate networks communicatively coupled between a first customer network and a second customer network, and providing an L2 service to transport L2 communications through the plurality of intermediate networks using the LSP.

Claim 24

Claim 24 requires a system comprising a border router that establishes a label switched path (LSP) through a plurality of intermediate networks, wherein the LSP communicatively couples a first customer network and a second customer network, a first route reflector associated with the first customer network that communicates layer two (L2) service information with a

second route reflector associated with the second customer network via routing communications that conform to an exterior routing protocol, wherein the routing communications include the L2 service information, and an edge router that provides an L2 service to the first customer network in accordance with the L2 service information to transport L2 communications between the first customer network and the second customer network through the plurality of intermediate networks using the LSP.

For reasons similar to those set forth above, neither AAPA nor Sanderson teaches or suggests these elements. For example, AAPA and Sanderson fail to teach or suggest a first route reflector associated with the first customer network that communicates L2 service information with a second route reflector associated with the second customer network via routing communications that conform to an exterior routing protocol, wherein the routing communications include the L2 service information. As another example, AAPA and Sanderson fail to teach or suggest a border router that establishes a LSP through a plurality of intermediate networks, and an edge router that provides an L2 service to the first customer network in accordance with the L2 service information to transport L2 communications between the first customer network and the second customer network through the plurality of intermediate networks using the LSP.

Claim 34

Claim 34 requires a computer-readable medium comprising instructions to cause a processor to execute a routing process that receives label information for a label switched path (LSP) through plurality of intermediate networks communicatively coupled between a first customer network and a second customer network. Claim 34 further requires instructions to cause a processor to execute a layer two (L2) service that receives L2 service information associated with the second customer network using a first routing protocol, wherein the L2 service information is received using the first routing protocol by receiving a routing communication that includes the L2 service information, and transports L2 communications between the first customer network and the second customer network through the plurality of intermediate networks in accordance with the label information.

For reasons similar to those set forth above, neither AAPA nor Sanderson teaches or suggests these elements. For example, AAPA and Sanderson fail to teach or suggest receiving L2 service information using a routing protocol by receiving a routing communication that includes the L2 service information. As another example, AAPA and Sanderson fail to teach or suggest establishing a label switched path (LSP) through a plurality of intermediate networks communicatively coupled between a first customer network and a second customer network, and providing an L2 service to transport L2 communications through the plurality of intermediate networks using the LSP.

In order to support an anticipation rejection under 35 U.S.C. 102(b), it is well established that a prior art reference must disclose each and every element of a claim. This well known rule of law is commonly referred to as the "all-elements rule."[5] If a prior art reference fails to disclose any element of a claim, then rejection under 35 U.S.C. 102(b) is improper.[6]

Both AAPA and Sanderson fail to disclose each and every limitation set forth in claims 1–3, 5–14, 16–20, 22–26, 28–31 and 33–37. For at least these reasons, the Examiner has failed to establish a prima facie case for anticipation of Applicant's claims 1–3, 5–14, 16–20, 22–26, 28–31 and 33–37 under 35 U.S.C. 102(b) or 35 U.S.C. 102(e). Withdrawal of these rejections is requested.

Claim Rejection Under 35 U.S.C. § 103

Claims 4, 15 and 27

In the Office Action, the Examiner rejected claims 4, 15 and 27 under 35 U.S.C. 103(a) as being unpatentable over Sanderson as applied to claim 1, in view of Bragg (US 7,286,479). Applicant respectfully traverses the rejection. The applied references fail to disclose or suggest the inventions defined by Applicant's claims, and provide no teaching that would have suggested a rational reason to lead a person of ordinary skill in the art to arrive at the claimed invention.

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[5] *See Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 USPQ 81 (CAFC 1986) ("it is axiomatic that for prior art to anticipate under 102 it has to meet every element of the claimed invention").

[6] *Id. See also Lewmar Marine, Inc. v. Barient, Inc.* 827 F.2d 744, 3 USPQ2d 1766 (CAFC 1987); *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (CAFC 1990); *C.R. Bard, Inc. v. MP Systems, Inc.*, 157 F.3d 1340, 48 USPQ2d 1225 (CAFC 1998); *Oney v. Ratliff*, 182 F.3d 893, 51 USPQ2d 1697 (CAFC 1999); *Apple Computer, Inc. v. Articulate Systems, Inc.*, 234 F.3d 14, 57 USPQ2d 1057 (CAFC 2000).

Regarding claims 4, 15, and 27, the Office Action acknowledged that Sanderson does not disclose or suggest the use of network layer reachability information (NLRI), but stated that Bragg teaches the exchange of NLRI encoded as address prefixes, citing col. 1, ll. 26–33 of Bragg. The Examiner appears to overlook the actual requirements of claims 4, 15, and 27. Claims 4 and 15 require that the second routing protocol carries the label information associated with the LSP as network layer reachability information (NLRI) that is associated with a route advertised between the first customer network and the second customer network. Claim 27 requires that the routing protocol has been redefined to carry the label information as NLRI that is associated with a route advertised between the first customer network and the second customer network. Nothing in Bragg or Sanderson discloses or suggests redefining a routing protocol to carry label information associated with an LSP as NLRI associated with a route. Applicant therefore requests withdrawal of this rejection.

Claims 10, 21 and 32

In the Office Action, the Examiner rejected claims 10, 21 and 32 under 35 U.S.C. 103(a) as being unpatentable over Sanderson as applied to claim 1, in view of AAPA. Applicant respectfully traverses the rejection. The applied references fail to disclose or suggest the inventions defined by Applicant's claims, and provide no teaching that would have suggested a rational reason to lead a person of ordinary skill in the art to arrive at the claimed invention.

Regarding claims 10, 21 and 32, the Office Action stated that Sanderson discloses the claimed invention except for VPLS and Ethernet. The Examiner cited AAPA at paragraph [0004] as teaching using VPLS and Ethernet communications. On this basis, the Examiner concluded that it would have been obvious to modify the teachings of Sanderson to share other data services using VPLS. However, as explained above, Sanderson fails to even teach or suggest exchanging L2 service information using a routing protocol. Thus, even if Sanderson were modified as suggested by the Examiner, nothing in AAPA or Sanderson would suggest the use of a routing protocol to exchange VPLS information.

For at least these reasons, the Examiner has failed to establish a prima facie case for non-patentability of Applicant's claims 4, 10, 15, 21, 27, and 32 under 35 U.S.C. 103(a). Withdrawal of this rejection is requested.

New Claims:

Applicant has added claim 38 to the pending application. The applied references fail to disclose or suggest the inventions defined by Applicant's new elaims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed inventions. As one example, the reference fail to disclose or suggest injecting the L2 service information into stored route information and resolving the route information to associate routes associated with the injected L2 service information with respective next-hops, as recited by claim 38. No new matter has been added by the new elaims.

CONCLUSION

All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending elaims. Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed attorney to diseuss this applieation.

Date:

Deeember 16, 2008

SHUMAKER & SIEFFERT, P.A.
1625 Radio Drive, Suite 300
Woodbury, Minnesota 55125
Telephone: 651.286.8354
Facsimile: 651.735.1102

By:

Name: Jennifer M.K. Rogers
Reg. No.: 58,695